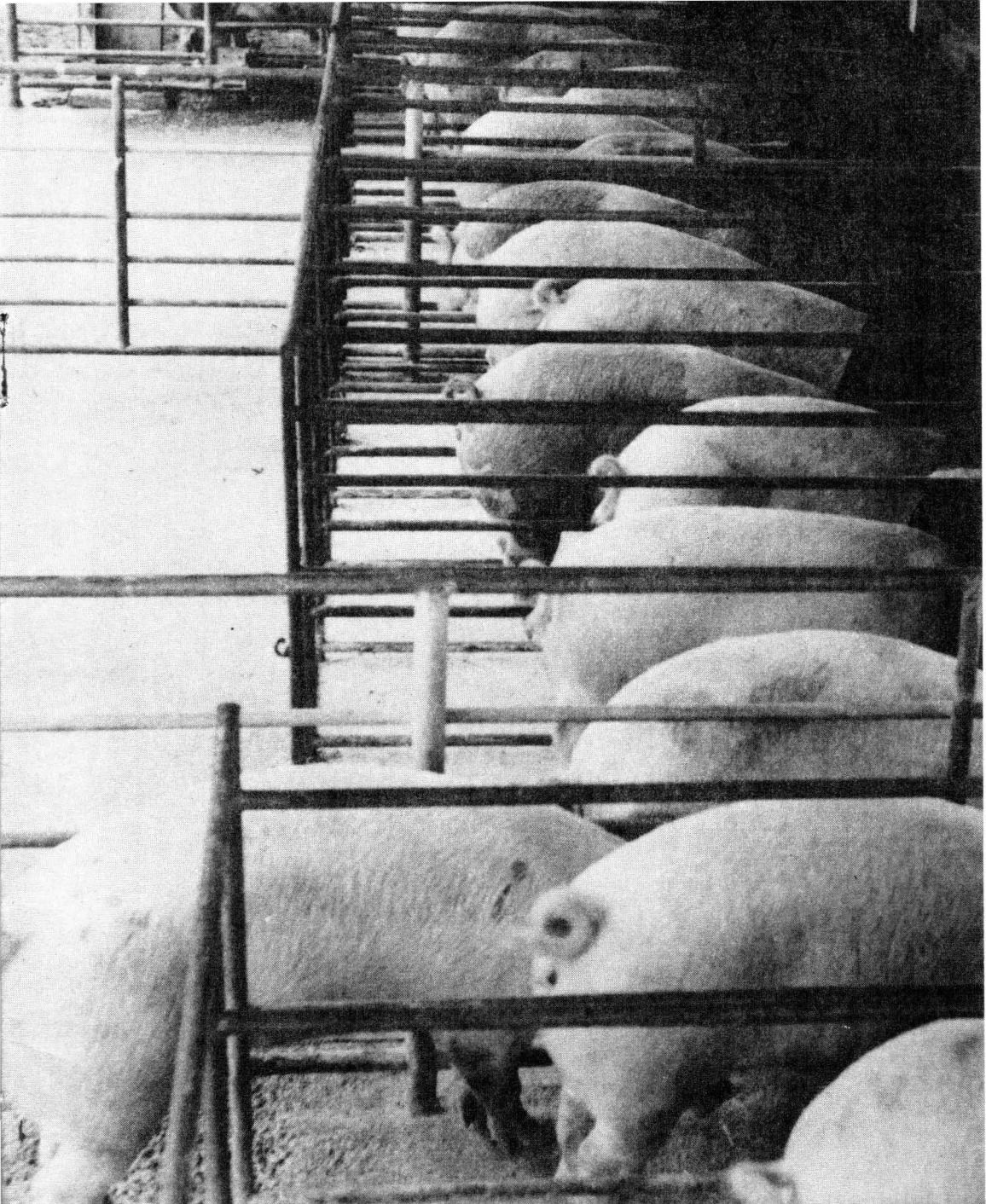

MANAGEMENT AND FEEDING OF THE SWINE BREEDING HERD

UNIVERSITY OF HAWAII COOPERATIVE EXTENSION SERVICE CIRCULAR 417

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MANAGEMENT AND FEEDING OF THE SWINE BREEDING HERD

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Whether a sow produces two pigs or ten, about the same amount of feed, labor, space, and equipment will be required up to farrowing time. Size of litter at birth is a trait that is not greatly influenced by heredity. Thus, most of the variation in litter size is due to environmental factors rather than genetic differences. This points up the important role the swine producer plays in management and feeding during the pre-breeding, breeding, and gestation periods in determining subsequent farrowing results.

PROSPECTIVE BREEDING ANIMALS

Feeding and management of female breeding stock should start with developing the gilt. In most commercial hog enterprises in Hawaii, the usual practice is to save prospective replacement gilts when they have reached a market weight of 170 to 180 pounds. Selection at this time should be made on the basis of fast growth rate, minimum backfat, desirable conformation, and freedom from defects. After this, moderate to fast rate of gain is best for early puberty, provided the pigs are growing and developing normally rather than putting on excessive fat. During this period of development gilts should be gaining about 3/4 to 1 pound per day. On a grain feeding program, moderate gain will be accomplished by feeding 4-1/2 to 5-1/2 pounds of a 15-percent crude protein, 75 percent TDN (Total Digestible Nutrients) balanced ration up to two weeks before breeding. Gilts raised on a garbage feeding program should be fed supplements sufficient to make sure of optimum growth and development to breeding age.

BREEDING SEASON, MANAGEMENT AND FEEDING OF FEMALES

Feeding and management of the female during the breeding season should be directed toward increasing the number of eggs shed at ovulation, increasing conception rate, and reducing embryonic death loss. Feeding and management of the boar should be directed toward consistent production of quality semen.

Age of Breeding Gilts

Although gilts may show their first heat and shed viable eggs at around 6 months of age, it is best to delay breeding until they have gone through two to three heat periods. If gilts have been properly grown, they will be around 8 months of age and weigh 240 to 250 pounds at the time of first breeding. By delaying breeding until the third heat period, ovulation is increased with subsequent litter size increased by two to three pigs. Rather than weight, the age of

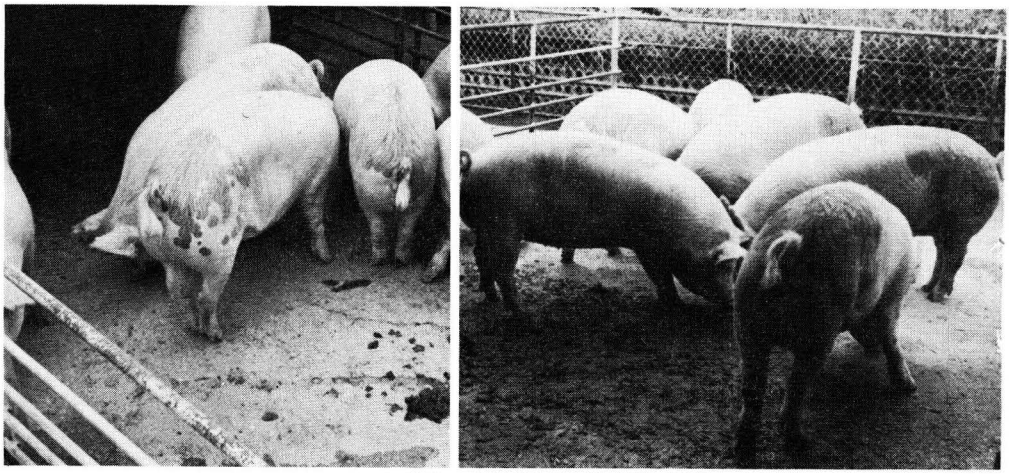


Figure 1. Developing breeding gilts 7 months old, average weight 230 pounds.

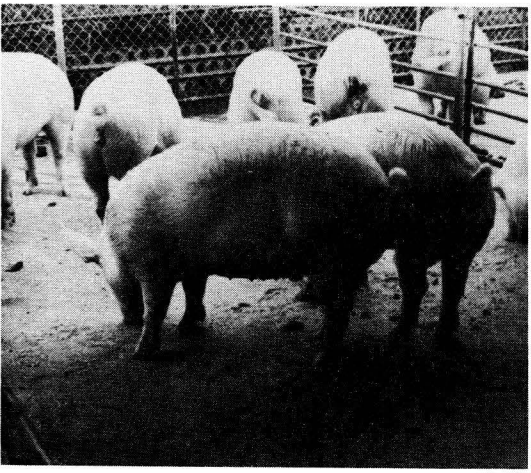
the gilts is probably a more important criterion for determining the time for first breeding. Under normal conditions in the average herd, about 80 percent of the gilts bred should conceive at first service. About one-half of the balance should conceive with service on the next heat.

Rebreeding Sows

During lactation, heat does not occur often. It rarely occurs before the fourth or fifth week. Sows may exhibit a post-partum heat during the first 3 to 7 days after farrowing and will accept the boar. Normally, however, this is a sterile heat since the ova are not released from the ovary. When a litter dies or is removed from the sow soon after farrowing, a fertile heat will occur on the tenth to the twentieth day after farrowing. Occasionally, some sows may come into heat while lactating shortly before the pigs are weaned at 8 weeks, or if only two to three pigs are being nursed. When pigs are weaned, sows normally come into heat a few days afterward—3 to 4 days if weaning occurs at 8 weeks, 6 to 9 days if weaning under 3 weeks. Sows in good physical condition can be bred at the first heat after the pigs are weaned, although sows from which pigs are weaned early release fewer ova than sows from which pigs are weaned at a later age.

Flushing Gilts

Flushing means to increase the feed energy intake of gilts before breeding. Its purpose is to increase the number of eggs shed and thus increase litter size. Increase the feed energy intake 10 to 14 days before breeding. On a grain feeding program, gilts may be self-fed during this period. If gilts are hand-fed, the feeding level can be increased 50 to 100 percent. For gilts raised on a garbage feeding program, it is desirable to reduce the amount of garbage fed and increase the energy intake by feeding more grain mixture supplements.



Flushing is most effective when gilts have previously been fed a lower level of energy so that they are in a gaining condition during the flushing period. Some research reports indicate that using high levels of some of the antibiotics just before breeding and during the breeding season frequently improves conception rate and subsequent litter size. The exact value of antibiotics varies from farm to farm, depending on disease level, sanitary conditions, and feeding and management practices. After breeding, gilts should be returned to a feeding program of restricted energy intake.

For a similar flushing effect on sows bred at the first heat after weaning, follow a full-feeding or self-feeding program during lactation and through breeding. The net effect of this is that the sow loses less weight during lactation and tends to be in a gaining condition at weaning time and subsequently at breeding time.

Sow Herd Health

Before breeding, treat sows and gilts for internal parasites. Piperazine is an example of a safe and effective wormer that may be given in the feed or water. The manufacturer's recommendations for use should always be followed accurately.

Sows and gilts should be inspected for the presence of external parasites and treated accordingly. In applying insecticides, it is important that the entire body surface be covered, particularly around and inside the ears. To allow sprays and dips to penetrate mange lesions, it is better to keep treated animals out of the sun and wind for a few hours after treating to allow slow drying. Table 1 lists recommended insecticides for external parasite control.

A newly purchased breeding gilt should be isolated from the rest of the herd for at least 30 days. No breeding gilt should be introduced into the herd unless she has been tested for brucellosis or has come from a brucellosis-validated herd.

During the breeding season, stress on the sows and gilts, such as overheating, vaccination, should be avoided. Sows and gilts showing fever or illness should not be bred, to avoid possible increase in embryonic death loss.

Breeding Methods

The two methods of breeding commonly used are hand breeding and pasture or pen breeding.

Hand breeding involves taking the sow to the boar or vice versa and removing one or the other after mating is completed. Compared with pen breeding, hand breeding has the advantage of allowing better regulation of the use and activity of the boar so that it is possible to breed the boar

*Table 1. Insecticides recommended for swine lice control.**

Insecticide	*Method of Application*	*Safety Restrictions*
Carbaryl	Spray thoroughly. Repeat as needed.	1. Do not treat sick animals. 2. Do not treat animals less than 3 months old with Coumaphos. Spray animals 3 to 6 months old only lightly. Do not use with synergized pyrethrins, allethrin, or synergist. Do not spray animals for 10 days before or after exposure to disease, shipping or weaning. Do not apply Coumaphos in conjunction with oral drenches or other medications, such as phenothiazine or with other organic phosphates. 3. Do not dip animals less than 3 months old in Lindane or Dioxathion. 4. Do not reapply Dioxathion or Ronnel within 2 weeks. Withdraw beddings treated with Ronnel 14 days before slaughter of swine. 5. Do not apply Ciodrin more often than once a week. 6. Do not use Malathion on animals less than 1 month old. 7. Do not apply Carbaryl more often than once every 4 days. 8. Avoid contamination of feed and water. 9. Minimum days from last application to slaughter: Carbaryl..... 7 days DDT..... 30 days Lindane..... 30 days (dust and sprays) 60 days (dip) Ronnel..... 42 days (when wettable powder or emulsifiable concentrate used) 14 days (when granules used) Toxaphene ..... 28 days
Ciodrin	Spray thoroughly. Repeat once a week or as necessary.	
Coumaphos DDT Dioxathion Lindane Malathion Ronnel (Korlan) Methoxychlor	Immerse, spray, or dust thoroughly. Use Lindane dusts and DDT dusts and sprays only once, but repeat other treatments after 2 to 3 weeks if needed.	
Toxaphene	Spray thoroughly. Repeat after 2 to 3 weeks if needed.	

NOTE: Insecticides can be poisonous. Follow directions carefully and heed all precautions on the container label.

* *From Agriculture Handbook No. 313, U. S. Department of Agriculture, 1966.*

GESTATION TABLE (113 DAYS)

Range of Gestation 110-116 days
Recurrence of Heat 21 days Ave.
Duration of Heat 2-3 days Ave.

DATE BRED	DUE TO FARROW	DATE BRED	DUE TO FARROW	DATE BRED	DUE TO FARROW
Jan. 1	Apr. 24	May 6	Aug. 27	Sept. 8	Dec. 30
Jan. 6	Apr. 29	May 11	Sept. 1	Sept. 13	Jan. 4
Jan. 11	May 4	May 16	Sept. 6	Sept. 18	Jan. 9
Jan. 16	May 9	May 21	Sept. 11	Sept. 23	Jan. 14
Jan. 21	May 14	May 26	Sept. 16	Sept. 28	Jan. 19
Jan. 26	May 19	May 31	Sept. 21		
Jan. 31	May 24			Oct. 3	Jan. 24
		June 5	Sept. 26	Oct. 8	Jan. 29
Feb. 5	May 29	June 10	Oct. 1	Oct. 13	Feb. 3
Feb. 10	June 3	June 15	Oct. 6	Oct. 18	Feb. 8
Feb. 15	June 8	June 20	Oct. 11	Oct. 23	Feb. 13
Feb. 20	June 13	June 25	Oct. 16	Oct. 28	Feb. 18
Feb. 25	June 18	June 30	Oct. 21		
				Nov. 2	Feb. 23
Mar. 2	June 23	July 5	Oct. 26	Nov. 7	Feb. 28
Mar. 7	June 28	July 10	Oct. 31	Nov. 12	Mar. 5
Mar. 12	July 3	July 15	Nov. 5	Nov. 17	Mar. 10
Mar. 17	July 8	July 20	Nov. 10	Nov. 22	Mar. 15
Mar. 22	July 13	July 25	Nov. 15	Nov. 27	Mar. 20
Mar. 27	July 18	July 30	Nov. 20		
				Dec. 2	Mar. 25
Apr. 1	July 23	Aug. 4	Nov. 25	Dec. 7	Mar. 30
Apr. 6	July 28	Aug. 9	Nov. 30	Dec. 12	Apr. 4
Apr. 11	Aug. 2	Aug. 14	Dec. 5	Dec. 17	Apr. 9
Apr. 16	Aug. 7	Aug. 19	Dec. 10	Dec. 22	Apr. 14
Apr. 21	Aug. 12	Aug. 24	Dec. 15	Dec. 27	Apr. 19
Apr. 26	Aug. 17	Aug. 29	Dec. 20		
May 1	Aug. 22	Sept. 3	Dec. 25		

Table 2. Farrowing dates of sows according to breeding dates

BOAR'S BREEDING RECORD

Boar No. _____

Breed _____

Strain (Source) _____

Date Farrowed _____

DATA ON SOW		DATE OF SERVICE			SOW WTS (LB.)		DATE DUE	DATE FAR-ROWED	LITTER NO.
NUMBER	BREEDING	1st	2nd	3rd	WHEN BRED	109TH DAY OF GEST.			

Figure 2. Record form for recording breeding dates.

with more sows in a given length of time. An additional advantage of hand breeding is that accurate breeding dates are obtained. Figure 2 shows a form for recording breeding dates.

A sow's or gilt's heat usually lasts 36 to 72 hours, but considerable variation exists. Normally, gilts have a shorter heat period than sows, and sows that have just weaned a litter have a longer heat period. Since ovulation normally occurs 30 to 40 hours after the beginning of heat, the time of breeding affects conception rate and subsequent litter size. Allowing two services for each heat period results in increased conception rate and increased litter size at birth, compared with breeding only once. The second service should be the following day in both cases. In commercial operations, a second boar may be used. If the sow or gilt is to be bred only once, then mating should occur about 24 hours after the first sign of heat or about the first half of the second day of heat. If desired, a "pick-up" boar can be run in with the females about 17 to 18 days later to service any animal that may come in heat again.

A sow or gilt should not be considered in full heat until she will stand solidly for the boar or for firm hand pressure on the back or hips. Approaching heat is generally characterized by certain signs. About 3 to 4 days before standing heat, most females show some swelling and redness of the vulva. This condition continues until standing heat has passed. One or two days before standing heat, some interest in the boar may be shown, but fighting may also occur. The sow or gilt may also start riding or mounting other animals. After standing heat has passed, the same sequence of signs will occur, except in reverse order.

Not all boars react the same to hand breeding. There may be a problem in getting the boar to mate in the beginning. Management practices that help to train the boar for hand mating are given below:

1. Give the boar only a certain amount of time for breeding. If he doesn't breed, take him out of the pen.

2. Breed about the same time each day to establish a schedule for the boar.

3. Feed the boar after service. Occasionally, a boar will go "off feed" during the breeding season. Often, placing another animal in the pen will encourage the first boar to eat his feed to keep the other boar from getting it.

4. Boars are creatures of habit, so the breeding pen and surroundings should be the same. There is a difference of opinion as to whether it is better to take the sow to the boar or the boar to the sow.

5. Often young boars are more active if penned together rather than separately. Penning boars near sows and gilts, some of which are periodically coming into heat, frequently makes boars more active. However, this can work in the reverse by overactivating the boar with a resulting loss in condition.

6. On boars that appear to have no interest, the use of the male sex hormone, testosterone, can temporarily increase the boar's sex drive. The producer should consult his local veterinarian on this practice.

7. During hot weather, boars may appear sluggish. It is advisable to breed during the cool part of the day, such as first thing in the morning. If the temperature gets above 90°F., artificial cooling is helpful.

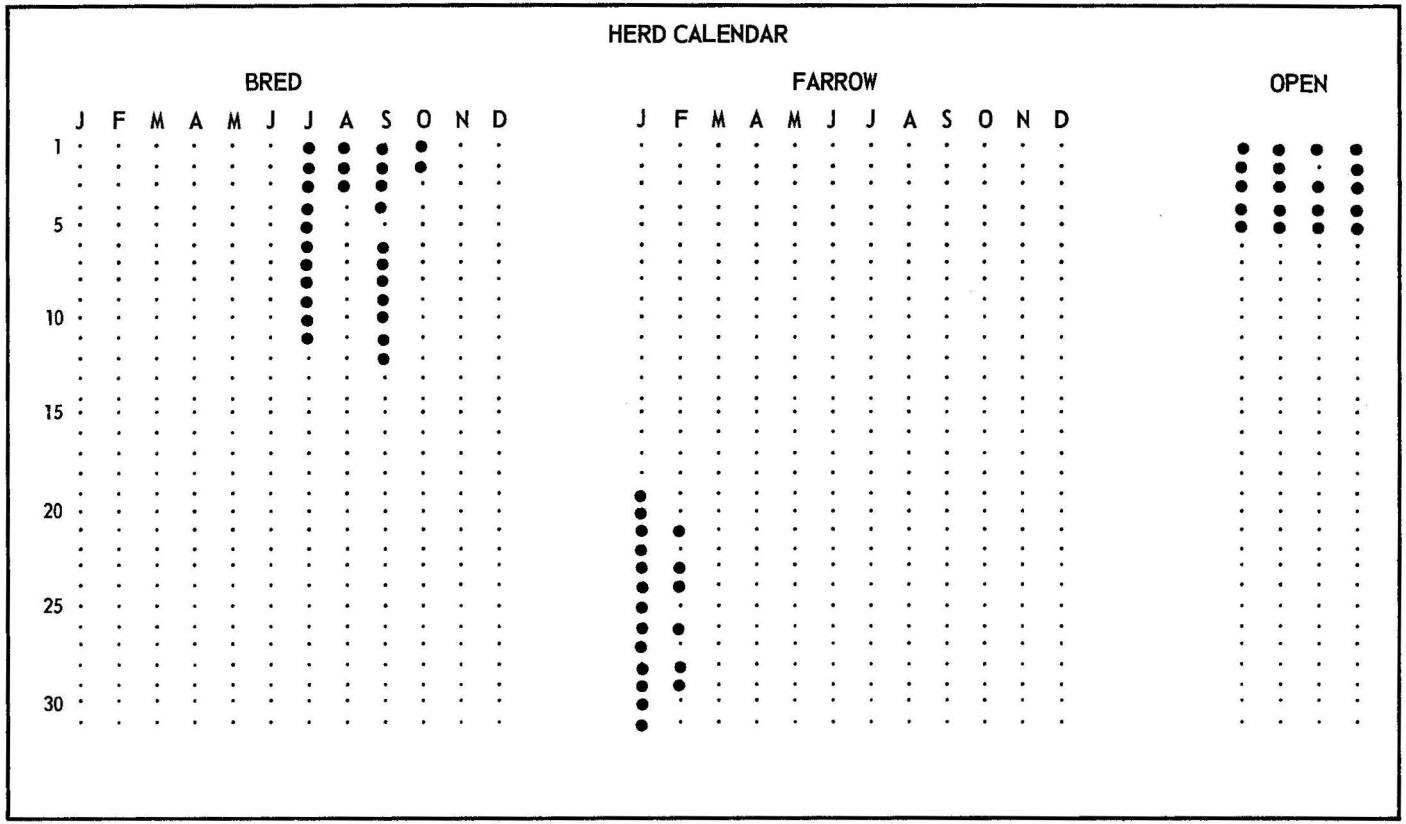


Figure 3. Herd calendar serves as checking board for females during breeding, gestation, and farrowing. Numbered round ear tags or drilled poker chips may be used. Tags or chips are moved on the board according to stage of production of sows.

In pasture or pen breeding, the boar is allowed to run with the sows. This method may be more convenient to the operator, but careful management is necessary to avoid overworking the boar. In addition, it is more difficult to obtain accurate breeding dates. Better results are obtained in pen breeding by alternating the boars used. Use one boar or set of boars on the same group of females. Alternating boars helps reduce occurrences of boars playing favorites and mating only with certain sows.

If a large group of sows are being run together, it is advisable to split the group so as to have one boar each for several small groups rather than several boars for a large group. If a young boar is put in with a group of older sows, take precautions to prevent the sows from fighting with the boar. This can result in the boar becoming a timid breeder. In pen breeding, a ratio of 1 boar to 10 sows should be allowed for young boars and 1 boar to 20 sows for older boars.

MANAGEMENT AND FEEDING OF BOARS

Management and feeding of the boar should be directed toward the consistent production of quality semen. Management factors to consider are:

1. Before breeding, young untried boars should be mated to a few market gilts to be sure they are active and fertile. Check gilts 21 days later to see if there is a return in heat. After a period of inactivity, the first service by boars is often not fertile.

2. Boars should receive some exercise to keep them from becoming sluggish or slow breeders.

3. Boars should not be allowed to become too fat. Boars in moderate flesh have more sex drive than overly fat boars. Before the breeding season, the daily feed allowance may be increased by 50 percent. This allowance may be maintained during the active breeding period. The amount of feed for boars not in use should be restricted. During breeding season, 1-1/2 to 2 pounds grain mixture per 100 pounds body weight should be sufficient to maintain the boar. This may be reduced to 1 to 1-1/2 pounds per 100 pounds body weight for idle boars. A ration similar to that fed the sows may be used.

4. Avoid overworking boars. Young boars (under one year old) have relatively limited sperm production and a low reserve supply of stored sperm. Young boars should be 7 to 8 months old and weigh around 250 pounds before being used for breeding. It is advisable to use young boars every other day at the most. If a young boar is used daily for a week, he should receive one week of sexual rest, to allow the daily sperm production to return to normal. Although mature boars may be used more frequently, up to 2 to 3 services daily, heavy service over a period of time should be followed by a period of rest to allow sperm replenishment. The maximum breeding load should be as follows:

	Hand mating per month	*Pen mating per month*
Young boar under 12 months old	20-25	10-12
Boar 12 to 18 months old	25-30	12-15
Boar over 18 months old	30-35	15-20

5. Breeding crates are recommended when breeding young gilts to mature boars or when mating young boars to large sows (Figure 4).

6. Tusks on older boars should be clipped for safer handling and for preventing injury to the other animals. Bolt cutters or hammer and cold chisel may be used for clipping.

7. It is important to see that the boar's feet are sound. A boar with sore feet is often a reluctant breeder. Toes should be trimmed if too long or not wearing evenly. Boars that are kept on concrete may become sore-footed. A small, clean dirt lot may be used for awhile to allow the boar to get over this condition.

8. During hot weather, always provide adequate shade and, if possible, use artificial cooling devices when the temperature goes over 90°F.

9. It is advisable not to ring the nose of a boar. A tender nose can affect his courting and subsequent breeding.

10. Newly purchased herd boars should be on the premises at least one month before use and kept isolated from the rest of the herd. Here are tips for handling newly arrived boars:

a. Have clean, disinfected, dry housing available for the boar and give him an opportunity to rest.

b. It is advisable to know the previous feeding program of the boar so that a similar one can be followed in the beginning. Any change in the feeding program should be gradual; otherwise digestive upsets may result.

c. Newly purchased boars should be wormed and sprayed for lice. It is best to wait until the boar has had an opportunity

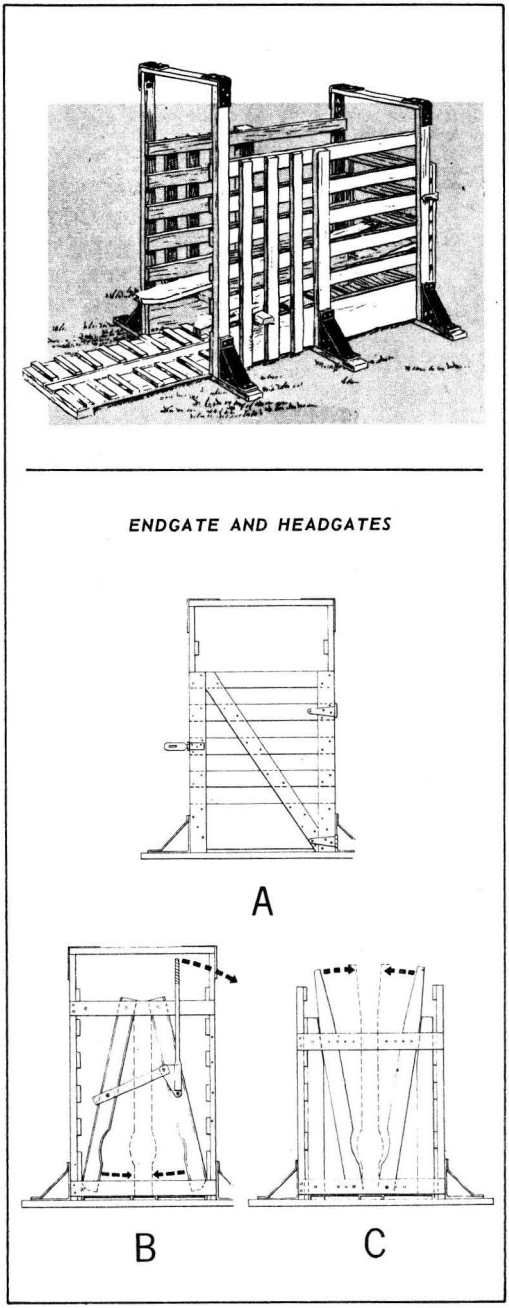


Figure 4. Breeding crate.

From Farmers' Bulletin 2192, U. S. Department of Agriculture.

to get over the effects of shipping before doing this.

d. If strange boars have to be put together, allow enough time before the breeding season so the boars may recover from possible injury caused by fighting. Only boars of the same age should be run together. In warm weather, boars should be put together during the late afternoon or early evening to prevent overheating.

POST-BREEDING AND GESTATION

Since most of the loss of embryos occurs during the first 25 days of pregnancy, it is important to avoid stress conditions that might have an adverse effect on the sow. As soon as possible after breeding, sows should be put back on a limited energy feeding program. Continued heavy feeding seems to cause high embryonic mortality during the first month after breeding. During the gestation period, the ration should provide nutrients to maintain the sow in optimum condition and support the developing fetus. The energy intake should be controlled to prevent excessive fat on the female. Two types of feeding programs can be followed during the gestation period—hand-feeding a high-energy ration or self-feeding a bulky, low-energy ration.

Although self-feeding requires less labor and is more convenient to the operator, this practice has not proved economically feasible because it results in increased waste of feed. Also, some sows still become too fat. Hand-feeding offers more control over what the sow eats, reduces waste of feed, and lowers feed cost. An additional advantage is that the sows may be observed every day.

In garbage-feeding programs, sufficient supplemental feed should be provided to make sure that the nutrient requirements of the animals are met and that optimum gains are obtained. The quality and dilution of the garbage fed determine the exact amount of supplementation required. Commercial supplements of 35- to 40-percent protein fed at the rate of 0.75 to 1 pound per head daily normally provide adequate nutrient supplementation. The level of feeding during gestation should be such that gilts are gaining about 0.80 to 1 pound per day and sows gaining 0.60 to 0.75 pound daily. A gilt in confinement on a grain feeding program normally requires about 1-1/2 to 2 pounds feed per 100 pounds body weight daily. Thus during the first two-thirds of the gestation period on a grain feeding program, 4 to 5 pounds daily of a 15-percent crude protein, 75-percent TDN ration may be fed. The last 30 days before farrowing, the level of feeding may be increased to 5 to 6 pounds daily. In the end, the judgment of the operator is the best guide to the exact feeding level.

The availability of good-quality legume or legume-grass mix pasture can result in feed saving. Normally, in Hawaii, pasture for grazing sows is not readily available. However, the pasture can be brought to the sows in the form of fresh forage or green-chop daily. A small amount of pasture land properly managed can provide a continual supply of quality forage. Mixtures suitable for hog pastures are shown in Table 3.

If available, corn or alfalfa silage may be fed during gestation. Gilts normally consume 8 to 12 pounds daily and sows 10 to 14 pounds. Adequate grain mixture supplementation should be provided at all times.

*Table 3. Suggested legume pasture mixtures to use for swine in Hawaii.**

		Seeding rate when used in established grass pasture	Seeding rate when used with other legumes in established grass pasture	Seeding rate when used singly
		Pounds per acre	Pounds per acre	Pounds per acre
Sea level to 1,000 ft. elevation	Bur clover[1]	1 - 2	1	10 - 15
	Black medic[1]	1 - 2	1	10 - 15
	Alfalfa	5 - 10	5	25
	Kotononis	1/2 - 1	1/2	2
	Stylo	1 - 2	1	2
	Sitratro	1 - 2	1	4
	Glycine; Clarence Cooper, or Tinaroo strains	2 - 4	2	4
	Kaimi clover	5	1 - 2	5 - 7
Over 1,000 ft. elevation	Mother white clover, New Zealand certified	1 - 2	1	2
	Ladino white clover	1 - 2	1	2
	Big Trefoil[2]	2	1	2
	Lotononis	1/2 - 1	1/2	2
	Vetch, common or hairy varieties	10 - 15	5	15
	Kenland red clover	5 - 10	5	10 - 15
	Alfalfa	10 - 15	15	25

1 Best growth in fall, winter, spring.
2 Best growth in summer.
NOTE: All legume seeds should be inoculated with the proper bacteria to ensure good nodule formation.

** Recommendations by C. Lyman, Extension Specialist in Pasture Management, University of Hawaii.*

*Table 4. Daily nutrient requirements of breeding stock (amounts per animal per day).**

	BREEDING STOCK			
	Bred		Boars	
	Sows	Gilts	Young	Adult
Liveweight, lb.	300	500	300	500
Expected daily gain, lb.	1.0	0.7	1.0	--
Total air dry feed, lb.	5.5	6.5	6.0	7.5
Protein and energy:				
Crude protein, lb.	0.88	0.91	0.90	0.98
Total digestible nutrients, lb.	4.1	4.9	4.2	5.2
Digestible energy, Kcal.[1]	8,200	9,800	8,400	10,400
Inorganic nutrients:				
Calcium, gm.	15.0	17.7	16.3	20.4
Phosphorus, gm.	10.0	11.8	10.9	13.6
Salt (NaCl), gm.	12.5	14.7	13.6	17.0
Vitamins:				
Carotene, mg.[2]	16.5	19.5	18.0	22.5
Vitamin A, I.U.[2]	8,250	9,750	9,000	11,250
Vitamin D, I.U.	550	650	600	750
Thiamin, mg.	2.8	3.2	3.0	3.8
Riboflavin, mg.	8.2	9.8	9.0	11.2
Niacin, mg.	44.0	52.0	48.0	60.0
Pantothenic acid, mg.	33.0	39.0	36.0	45.0
Pyridoxine, mg.	--	--	--	--
Choline, mg.	--	--	--	--
Vitamin B_{12}, mcg.	27.5	32.5	30.0	37.5

1 Digestible energy was calculated on the assumption that 1 lb. TDN has 2,000 Kcal. digestible energy.
2 Carotene and vitamin A values based on 1 mg. carotene equals 500 I.U. vitamin A for the pig. Vitamin A requirements can be met by either carotene or vitamin A; both are not needed.
** From N.R.C. Publication 1192 (1964).*

*Table 5. Nutrient requirements of breeding stock (percentage or amount per pound of total ration).**

	BREEDING STOCK			
	Bred		Boars	
	Gilts	Sows	Young	Adult
Liveweight, lb.	300	500	300	500
Expected daily gain, lb.	1.0	0.7	1.0	--
Protein and energy:				
Crude protein, %	16	14	15	13
Total digestible nutrients, %	75	75	70	70
Digestible energy, Kcal.[1]	1,500	1,500	1,400	1,400
Inorganic nutrients:				
Calcium, %	0.6	0.6	0.6	0.6
Phosphorus, %	0.4	0.4	0.4	0.4
Salt (NaCl), %	0.5	0.5	0.5	0.5
Vitamins:				
Carotene, mg.[2]	3.0	3.0	3.0	3.0
Vitamin A, I.U.[2]	1,500	1,500	1,500	1,500
Vitamin D, I.U.	100	100	100	100
Thiamine, mg.	0.5	0.5	0.5	0.5
Riboflavin, mg.	1.5	1.5	1.5	1.5
Niacin, mg.	8.0	8.0	8.0	8.0
Pantothenic acid, mg.	6.0	6.0	6.0	6.0
Pyridoxine, mg.	--	--	--	--
Choline, mg.	--	--	--	--
Vitamin B_{12}, mcg.	5.0	5.0	5.0	5.0

1 Digestible energy was calculated on the assumption that 1 lb. TDN has 2,000 Kcal. digestible energy.
2 Carotene and vitamin A values based on 1 mg. carotene equals 500 I.U. vitamin A for the pig. Vitamin A requiremens can be met by either carotene or vitamin A; both are not needed.
** From N.R.C. Publication 1192 (1964).*

Table 6. Sample gestation rations (15% crude protein) suitable for hand feeding.

Ingredients	*Ration A*	*Ration B*	*Ration C*	*Ration D*	*Ration E*	*Ration F*
Corn - milo - barley	795	722	750	588	310	205
Millrun - middlings	---	---	---	---	200	---
Molasses	---	---	---	200	250	250
Pineapple bran	---	---	---	---	---	200
Alfalfa meal, dehydrated	---	100	100	---	50	100
Soybean oil meal (44%)	180	155	100	147	105	160
Meat and bone meal (45%)	---	---	15	20	30	30
Tuna meal (60%)	---	---	25	40	50	50
Steamed bone meal - dicalcium phosphate	10	15	5	---	---	---
Ground limestone	10	3	---	---	---	---
Trace mineral salt	5	5	5	5	5	5
Vitamin premix	To be added at level recommended by manufacturer.					

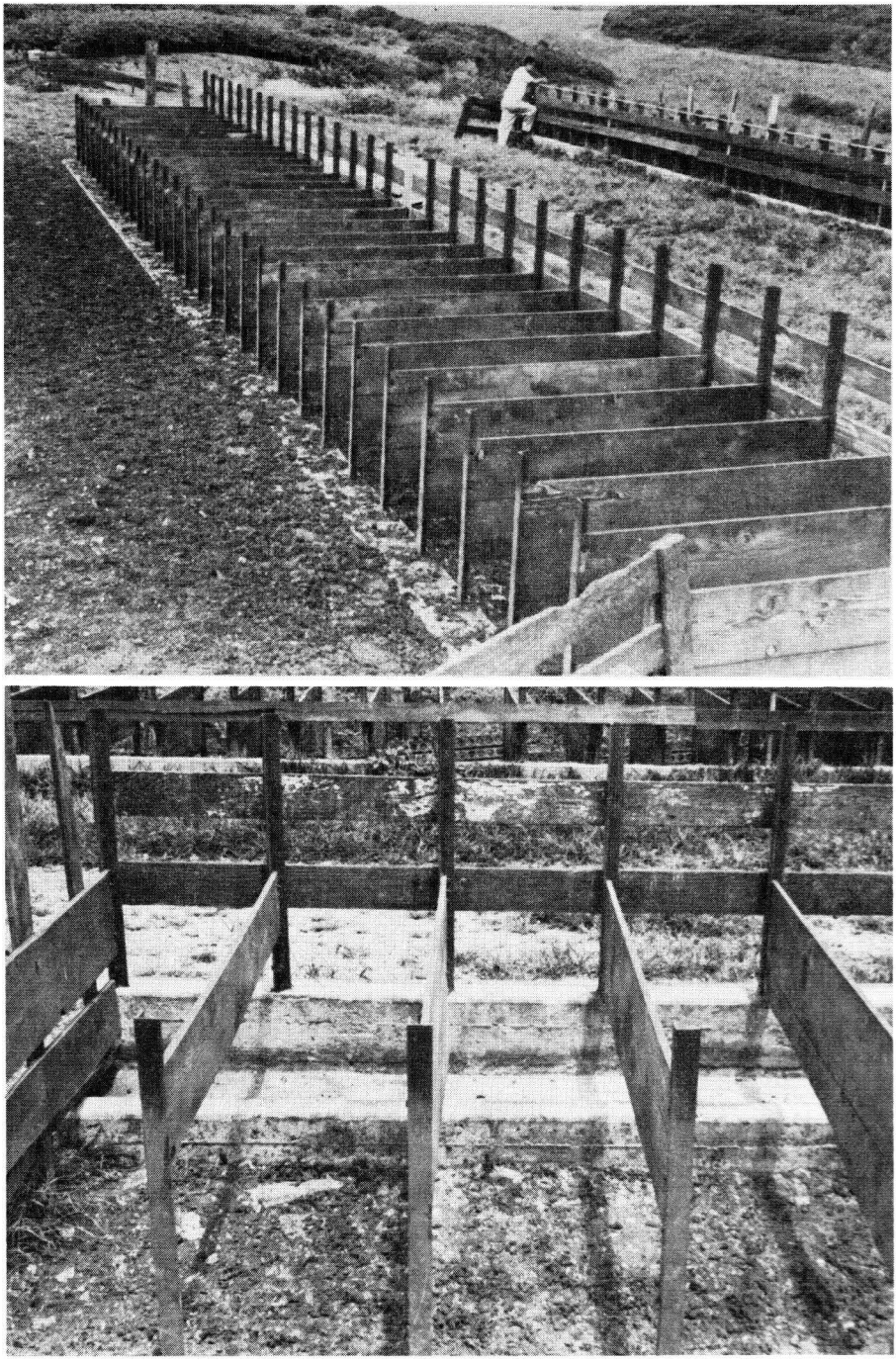


Figure 5. Feeding stalls.

Nutrient requirements and sample rations suitable for breeding animals are given in Tables 4, 5, and 6.

Management practices during gestation should include the following:

1. In a confinement unit, 30 to 50 square feet of housing space per sow should be allowed. When animals are run on pasture, the amount of shade or shelter space should be:

Gilts or young boar	15 to 17 square feet
Sow or mature boar	18 to 20 square feet
Sow or gilt and litter	50 to 65 square feet

2. When hand-feeding or hand-watering sows in groups, 1-1/2 to 2 linear feet of trough space per gilt or sow should be allowed. In a restricted feeding program, it is important to allow adequate feeding space to make sure each animal receives its fair share. The use of feeding stalls (Figure 5) helps to assure that each sow obtains the required amount of feed.

3. When sows and gilts are self-fed during gestation, the number of animals per linear foot of feeder space or per self-feeder hole should be:

Pasture	3 to 4 animals
Dry lot	2 to 3 animals

4. When using automatic waterers, allow 1 cup for each 10 sows or 12 gilts. If hand-watering, allow about 3 gallons of water per gestating sow.

5. If sows and gilts are run in groups, it is advisable to keep the as small as possible. On pasture, one group should not include more than 20 to 30 animals. Sows of similar age, stage of gestation, and aggressiveness should be fed as a unit. Gilts should be run separately from sows.

6. On good-quality legume or legume-grass pasture, 8 to 10 sows or 10 to 12 gilts per acre should be allowed.

7. One month before farrowing, animals should be wormed. At all times, external parasites should be controlled.

8. Sows should be washed with soap and water and moved to a clean farrowing unit on the 110th to 112th day of gestation.

CHECKLIST -- SCHEDULE OF OPERATIONS

Pre-Breeding

- ☐ Select replacement gilts at market weight based on:
  Growth rate,
  Meatiness and minimum backfat,
  Desirable conformation.
- ☐ Isolate newly purchased breeding animals from rest of the herd for 30 days.
- ☐ Feed developing gilts to gain 3/4 to 1 pound daily.
- ☐ Worm females 2 to 4 weeks before breeding.
- ☐ Test-breed untried boars on market gilts to make sure they are fertile.

Breeding

- ☐ Breed gilts at 7-1/2 to 8 months of age and weighing 240 to 250 pounds.
- ☐ Rebreed sows on first estrus after weaning, depending on condition and health.
- ☐ Permit two services per heat period for increased litter size.
- ☐ Avoid overworking boars.

Post-Breeding

- ☐ Reduce feed energy intake of gilts and sows to reduce embryo death loss.
- ☐ Avoid stress conditions.

Gestation

- ☐ Hand-feed for best results. Gilts should gain 0.8 to 1.0 pound daily and sows 0.6 to 0.75 pound daily.
- ☐ Worm females 30 days before farrowing.
- ☐ Bring sows and gilts into the farrowing unit on the 110th to 112th day of gestation.

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